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Perfectionism, Personality, and Affective Experiences:
New Insights from Revised Reinforcement Sensitivity Theory

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Abstract

Previous studies have linked perfectionism to differences in reinforcement sensitivity, but findings have been mixed. The present study explored the relationships between three forms of perfectionism (self-oriented, other-oriented, socially prescribed) and components of the revised Reinforcement Sensitivity Theory of personality in relation to the experience of positive and negative affect. In a sample of 388 university students, we found consistent evidence of significant bivariate and semipartial correlations controlling for the overlap between the three forms of perfectionism: self-oriented perfectionism showed positive relationships with the Behavioral Approach System (BAS), the Behavioral Inhibition System (BIS), and the Fight-Flight-Freeze System (FFFS); other-oriented perfectionism showed a negative relationship with the BIS (and was unrelated to the FFFS); and socially prescribed perfectionism showed positive relationships with the BIS and BAS impulsiveness, and a negative relationship with BAS goal-drive persistence (and was unrelated to the FFFS). Furthermore, mediation analyses indicated that the reinforcement sensitivity components (BIS and BAS, but not FFFS) explained differences in how the three forms of perfectionism predicted recent positive and negative affect. These findings open up new empirical avenues in suggesting that fundamental emotion-motivational systems play a key role in the relationship of perfectionism and affective experiences.

Keywords: perfectionism; reinforcement sensitivity theory; affect; mediation analyses

1. Introduction

1.1. Multidimensional perfectionism

Perfectionism is a multidimensional personality trait characterized by exceedingly high standards of performance (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). One of its most influential and widely researched models of perfectionism is Hewitt and Flett's (1991) which differentiates three forms of perfectionism: self-oriented, other-oriented, and socially prescribed. Self-oriented perfectionism reflects beliefs that striving for perfection and being perfect are important. Self-oriented perfectionists are highly self-critical if they fail to meet their own expectations. In contrast, other-oriented perfectionism reflects beliefs that it is important for others to strive for perfection and be perfect. Other-oriented perfectionists are highly critical of others who fail to meet these expectations. Finally, socially prescribed perfectionism reflects beliefs that striving for perfection and being perfect are important to

others. Socially prescribed perfectionists believe that others expect them to be perfect, and that others will be highly critical of them if they fail to meet these expectations.

These three forms of perfectionism have shown different relationships with indicators of psychological well-being (Hewitt & Flett, 2004). In particular, self-oriented perfectionism is an ambivalent forms of perfectionism showing positive and negative relationships with psychological well-being whereas other-oriented perfectionism usually shows no significant relationship with psychological well-being. In contrast, socially prescribed perfectionism is a maladaptive form showing consistent negative relationships with psychological well-being. As regards affective experiences (Watson, Clark, & Tellegen, 1988), self-oriented perfectionism has shown positive correlations with both positive and negative affect, whereas socially prescribed perfectionism has shown positive correlations with negative affect and, sometimes, negative correlations with positive affect (e.g., Damian, Stoeber, Negru, & Băban, 2014; Flett, Blankstein, & Hewitt, 2009; Molnar, Reker, Culp, Sadava, & DeCourville, 2006). In comparison, other-oriented perfectionism usually shows nonsignificant correlations with negative affect, but may show positive correlations with positive affect (e.g., Flett et al., 2009; Molnar et al., 2006).

1.2. Multidimensional perfectionism and reinforcement sensitivity

The Reinforcement Sensitivity Theory (RST) is a prominent neuropsychological theory of personality explaining the role of individual differences in fear and anxiety-related behaviors as well as approach-related behaviors. It assumes the existence of three emotional-motivational systems: one approach system (the Behavioral Approach System, BAS) and two avoidance systems (the Behavioral Inhibition System, BIS; and the Fight-Flight-Freeze System, FFFS). Whereas the BAS has been shown to be related to the experience of positive affect, the BIS and FFFS are related to the experience of negative affect (Corr, 2008). In this, the most distinctive features of the two avoidance systems are emotional output and defensive direction: The BIS activates behavioral repertoire when moving *toward* threat, eliciting the emotional state of anxiety; in contrast, the FFFS activates behavior that moves the individual *away* from threat, eliciting the emotional state of fear.

RST is a potentially important theory for research on multidimensional perfectionism because it may help explain why perfectionism is related to positive and negative affect. A number of studies have investigated perfectionism and components of RST using Carver and White's (1994) BIS/BAS Scales to differentiate the BIS, and three aspects of the BAS (reward responsiveness, drive, and fun seeking). As regards Hewitt and Flett's (1991) model of

perfectionism, a study described by Flett, Hewitt, Oliver, and Macdonald (2002) found all three forms of perfectionism to show positive correlations with the BIS. In addition, self-oriented perfectionism showed positive correlations with the BAS (reward responsiveness and drive). By comparison, Kaye, Conroy, and Fifer (2008) found only self-oriented perfectionism and socially prescribed perfectionism to show positive correlations with the BIS, but not other-oriented perfectionism. Moreover, when they combined BAS reward responsiveness, drive, and fun seeking to an overall BAS score, they found self-oriented perfectionism to show a positive correlations with the BAS whereas socially prescribed perfectionism showed a negative correlation.¹

The only study so far addressing how multidimensional perfectionism is related to revised RST is by Randles, Flett, Nash, McGregor, and Hewitt (2010) who examined two samples of university students using a reformulation of the BIS/BAS Scales to differentiate the BIS from the FFFS (Heym, Ferguson, & Lawrence, 2008). Across samples, self-oriented perfectionism showed positive correlations with the BIS, BAS reward responsiveness, and BAS drive, and socially prescribed perfectionism showed a positive correlation with the BIS. Otherwise, findings were mixed. In one sample, other-oriented perfectionism showed positive correlations with the BIS, BAS reward responsiveness, and BAS drive, and a negative correlation with the FFFS. In the other sample, other-oriented perfectionism showed no significant correlations with any component of revised RST. In addition, socially prescribed perfectionism showed an unexpected positive correlation with BAS reward responsiveness in one sample.

Notwithstanding some unexpected and nonsignificant correlations, when taken together, the findings from previous studies on multidimensional perfectionism and reward sensitivity provide two pieces of converging evidence. First, both self-oriented and socially prescribed perfectionism show consistent positive correlations with the BIS. Second, only self-oriented perfectionism shows consistent positive correlations with the BAS (particularly reward responsiveness and drive). In contrast, other-oriented perfectionism does not show a consistent pattern of correlations across studies.

1.3. The present study

The previous studies on multidimensional perfectionism and reinforcement sensitivity have a number of limitations. First, the three forms of perfectionism show considerable overlap—with correlations between the three forms ranging into the .50s (Hewitt & Flett, 2004)—and none of the studies controlled for this overlap when investigating the relationships between these three

forms and various RST components. Therefore, some of these unexpected and inconsistent correlations may be due to variance redundancy, and more consistent relationships may emerge when unique relationships are examined by statistically controlling for this overlap. Second, so far only one study investigated multidimensional perfectionism and components of revised RST (Randles et al., 2010), so clearly more research is needed. Third, there have been further recent developments in revised RST as regards theory, research, and measurement.

Reflecting further refinement and theoretical elaboration of RST (Corr & McNaughton, 2008, 2012; McNaughton & Corr, 2004), Corr and Cooper (2015) developed a new psychometric measure of revised RST—the Reinforcement Sensitivity Theory Personality Questionnaire (RST-PQ)—capturing individual differences the BIS, the FFFS, and four aspects of the BAS (reward interest, goal-drive persistence, reward reactivity, and impulsivity) as well as defensive fight, which provides the means to provide a more comprehensive investigation of perfectionism–RST relationships.

Consequently, the aim of the present study was to examine the unique relationships of self-oriented, other-oriented, and socially prescribed perfectionism with the components of the revised RST captured by the RST-PQ. In addition, the study aimed to investigate whether RST mediates the relationship between perfectionism and affective experiences. Randles et al. (2010) argued that the BIS serves as a mediator between multidimensional perfectionism and psychological maladjustment, and the mediation analysis they conducted found that the BIS mediated the effect of socially prescribed perfectionism on rumination (socially prescribed perfectionism → BIS → rumination), which is a cognitive vulnerability factor closely related to negative affect (e.g., Kirkegaard Thomsen, 2006). The present study aimed to expand on Randles et al.'s findings by further exploring mediation effects of revised RST regarding positive and negative affect (Watson et al., 1988).

In line with previous findings showing self-oriented perfectionism to be associated with positive affect once the overlap with socially prescribed perfectionism is controlled for (e.g., Molnar et al., 2006), we expected self-oriented perfectionism to show unique positive relationships with positive affect. Moreover, we expected the BAS to mediate these relationships. In contrast, we expected socially prescribed perfectionism to show unique positive relationships with negative affect, and the BIS to mediate these relationships. In contrast, the analyses for other-oriented perfectionism were largely exploratory because other-oriented perfectionism has not shown any clear pattern of relationships with BIS/BAS in previous studies

(cf. 1.2).

2. Method

2.1. Participants

A sample of 388 students (73 men, 312 women, 1 preferred not to state his/her gender) at the University of Kent was recruited via the School of Psychology's Research Participation Scheme. Mean age of students was 19.8 years ($SD = 4.0$). Using the categories of the university's equal opportunities monitoring form, students indicated their ethnicity as White (68%), Black (11%), Asian (10%), mixed race (6%), and other (5%). Students volunteered to participate for a £50 raffle (~US \$78) or extra course credit and completed all measures online using the School's Qualtrics® platform, which required to respond to all questions to prevent missing data.

2.2. Measures

2.2.1. Perfectionism

The 45-item Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 2004) was used to measure self-oriented perfectionism (e.g., "I demand nothing less than perfection of myself"), other-oriented perfectionism ("If I ask someone to do something, I expect it to be done flawlessly"), and socially prescribed perfectionism ("People expect nothing less than perfection from me"). The MPS has demonstrated reliability and validity in numerous studies (e.g., Hewitt & Flett, 1991, 2004). Participants were asked to what degree they agreed with each statement and responded on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

2.2.2. Reinforcement sensitivity

The 79-item Reinforcement Sensitivity Theory Personality Questionnaire (RST-PQ; Corr & Cooper, 2015) was used to measure BAS reward interest (e.g., "I regularly try new activities just to see if I enjoy them"), BAS goal-drive persistence ("I am very persistent in achieving my goals"), BAS reward reactivity ("I get a special thrill when I am praised for something I've done well"), BAS impulsivity ("I find myself doing things on the spur of the moment"), BIS ("When trying to make a decision, I find myself constantly chewing it over"), FFFS ("I am the sort of person who easily freezes-up when scared"), and defensive fight ("If I feel threatened I will fight back"). The RST-PQ is a recently developed questionnaire, but initial findings indicate good reliability and validity (Corr & Cooper, 2015). Participants were asked how accurately each statement described them and responded on a scale from 1 (*not at all*) to 4 (*highly*).

2.2.3. Positive and negative affect (past two weeks)

The 20-item Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) was

used to measure positive affect (e.g., “enthusiastic,” “proud”) and negative affect (“distressed,” “ashamed”). The PANAS is the most widely-used measure of positive and negative affect and has demonstrated reliability and validity in numerous studies (e.g., Crawford & Henry, 2004; Watson et al, 1998). Participants were asked to indicate to what extent they have felt each feeling/emotion during the past two weeks using a scale from 1 (*very slightly or not at all*) to 5 (*extremely*).

2.3. Data screening

Because multivariate outliers can distort the results of correlation and regression analyses, we excluded one participant who showed a Mahalanobis distance larger than the critical value of $\chi^2(12) = 32.91, p < .001$ (Tabachnick & Fidell, 2007). With this, the final sample comprised 387 participants. Next, we examined whether the variance-covariance matrices of male and female participants differed by computing a Box’s *M* test with gender as between-participants factor. Box’s *M* was nonsignificant with $p = .142$. Consequently, all analyses were collapsed across gender. Finally, we examined the reliability of the scale scores. All scores displayed satisfactory reliability (Cronbach’s alphas $> .70$; see Table 1).

3. Results

3.1. Bivariate correlations

First, we examined the bivariate correlations of perfectionism (Table 1). Self-oriented perfectionism showed significant positive correlations with all reinforcement sensitivity factors (except BAS impulsivity), indicating heightened general emotionality. In comparison, other-oriented perfectionism showed positive correlations only with BAS reward interest, BAS goal-drive persistence, BAS reward reactivity, and defensive fight, indicating strong approach motivation in the absence of negative emotionality. In contrast, socially prescribed perfectionism showed positive correlations with BAS impulsivity, BIS, and FFFS, indicating an unrestrained form of negative emotionality. Furthermore, self-oriented and other-oriented perfectionism showed positive correlations with both positive and negative affect, whereas socially prescribed perfectionism showed a negative correlation with positive affect and a positive correlations with negative affect. (For the correlations of the RST components, see Table 1.)

3.2. Semipartial correlations

Because the three forms of perfectionism showed considerable overlap (with correlations ranging from .31 to .47), we computed semipartial correlations between perfectionism and the RST components to examine the unique relationships (Table 2). Self-oriented perfectionism

showed the same pattern of relationships as in the bivariate correlations, whereas the other two forms of perfectionism showed a different pattern. Other-oriented perfectionism showed a negative relationship with BIS and a positive relationship with defensive fight. Socially prescribed perfectionism showed positive relationships with BIS, and BAS impulsivity and a negative relationship with BAS goal-drive persistence.

3.3. Multiple regressions

Next, we examined how perfectionism and reinforcement sensitivity predicted positive and negative affect, additionally probing for possible mediation effects. For this, we computed hierarchical regression analyses in two steps. In Step 1, the three forms of perfectionism were simultaneously entered as predictors. In Step 2, the RST components were added (Table 3).

As regards positive affect, self-oriented perfectionism showed significant positive regression coefficient, and socially prescribed perfectionism a significant negative coefficient in Step 1. In Step 2, self-oriented perfectionism ceased to show a significant coefficient, and socially prescribed perfectionism continued to show a significant negative coefficient that was reduced in size, indicating the presence of mediation effects (Baron & Kenny, 1986).

Furthermore, BAS reward interest, BAS goal-drive persistence, and BAS reward reactivity showed significant positive coefficients whereas BIS showed a significant negative coefficient.

As regards negative affect, only socially prescribed was a significant predictor in Step 1 showing a positive regression coefficient, indicating that the positive bivariate correlations that self- and other-oriented perfectionism showed with negative affect were due to their overlap with socially prescribed perfectionism. In Step 2, socially prescribed perfectionism continued to show a significant positive regression coefficient, but reduced in size. Furthermore, BIS showed a significant positive coefficient, and BAS goal-drive persistence showed a significant negative coefficient.

3.3. Mediation analyses

The pattern of significant regression coefficients in the regression analyses suggested that some effects of perfectionism were mediated by reinforcement sensitivity. Moreover, the results of Tables 2 and 3 combined suggested the possibility of further indirect effects of perfectionism predicting positive and negative affect via reinforcement sensitivity (perfectionism → reinforcement sensitivity → positive/negative affect). Consequently, we conducted mediation analyses with PROCESS (Hayes, 2012) testing each indirect effects for significance with Sobel

tests and 95% confidence-interval bootstrapping. Table 4 lists all significant indirect effects.² (Note that the sign of indirect effects is determined by the signs of effects it combines. If a predictor X positively predicts a mediator M, and M positively predicts an outcome Y, the indirect effect of X on Y is positive. The same holds if X negatively predicts M, and M negatively predicts Y. In contrast, if X positively predicts M, and M negatively predicts Y, the indirect effect of X on Y is negative. The same holds if X negatively predicts M, and M positively predicts Y.)

As regards positive affect, self-oriented perfectionism showed positive indirect effects via BAS reward interest, BAS goal-drive persistence, and BAS reward reactivity. In contrast, socially prescribed perfectionism showed a negative indirect effect via BAS goal-drive persistence. As regards negative affect, self-oriented perfectionism showed a negative indirect effect via BAS goal-drive persistence, but also a positive indirect effect via BIS. In contrast, other-oriented perfectionism showed a negative indirect effect via BIS. Like self-oriented perfectionism, socially prescribed perfectionism also showed a positive indirect effect via BIS, but—differently from self-oriented perfectionism—showed a positive indirect effect via BAS goal-drive persistence.

4. Discussion

4.1. The present findings

We sought to examine the unique relationships of self-oriented, other-oriented, and socially prescribed perfectionism with the different components of reinforcement sensitivity—regarding the Behavioral Approach System (BAS), the Fight-Flight-Freeze System (FFFS), and the Behavioral Inhibition System (BIS)—put forward by latest advances in theory and research on revised reinforcement sensitivity theory (Corr & Cooper, 2015). Furthermore, the study investigated how perfectionism and reinforcement sensitivity combine to predict recent positive and negative affect, and whether reinforcement sensitivity plays a mediating role in these predictions.

Self-oriented perfectionism showed unique positive relationship with all reinforcement sensitivity components (except BAS impulsivity), suggesting that people high in self-oriented perfectionism are highly reactive to positive and negative reinforcing stimuli. In the mediation analyses, self-oriented perfectionism had both positive and negative indirect effects on affective well-being confirming that it is an ambivalent form of perfectionism. On the one hand, self-oriented perfectionism predicted more positive affect via BAS reward interest, BAS goal-drive

persistence, and BAS reward reactivity, and less negative affect via BAS goal-drive persistence; on the other hand, self-oriented perfectionism predicted more negative affect via BIS. Self-oriented perfectionism thus appears to be a “double-edged sword” (Stoeber, 2014c) as it is predicting higher levels of positive affect as well as negative affect. Moreover, self-oriented perfectionism was the only form of perfectionism showing a unique positive relationship with the FFFS which is the avoidance system in revised RST associated with the emotional state of fear.

Other-oriented perfectionism showed a unique positive relationship with defensive fight, and a unique negative relationship with the BIS. Furthermore differing from self-oriented perfectionism, other-oriented perfectionism predicted less negative affect via low BIS activity in the mediation analyses. People high in other-oriented perfectionism thus appear highly defensive when attacked, but show reduced sensitivity to negative reinforcers (low BIS activity) which dovetails with findings that other-oriented perfectionism is related to psychopathy (Stoeber, 2014a). Moreover, even though the negative relationship we found with the BIS was weak (cf. Cohen, 1988), this reduced sensitivity appears to make them experience less negative affect compared to people low in other-oriented perfectionism.

In contrast, socially prescribed perfectionism emerged as a thoroughly maladaptive form of perfectionism, as was expected. Like self-oriented perfectionism, socially prescribed perfectionism showed unique positive relationships with the BIS, but also a positive relationship with BAS impulsiveness and a negative relationship with BAS goal-drive persistence. In the mediation analyses, socially prescribed perfectionism predicted less positive affect via low goal-drive persistence. In addition, it predicted more negative affect via low goal-drive persistence and high BIS activity. Furthermore, socially prescribed perfectionism had direct negative effects on affective well-being: a direct negative effect on positive affect, and a direct positive effect on negative affect. Like people high in self-oriented perfectionism, people high in socially prescribed perfectionism appear to have a highly active BIS, but are also impulsive and not persistent in their goal pursuits. Moreover, the combination of high BIS activity and low goal-drive persistence makes them experience more negative affect and less positive affect—over and above their usual affective experiences of low positive and high negative affect—compared to people low in socially prescribed perfectionism.

Our study is the first to examine the relationships of multidimensional perfectionism with the components of the expanded model of revised RST. It is noteworthy that the three forms of

perfectionism showed a distinctive profile of unique relationships with the revised RST components, providing further evidence that the three forms of perfectionism have unique profiles when unique relationships with personality characteristics are examined (e.g., Stoeber, 2014a, 2014b). In particular, it noteworthy that the BIS and FFFS showed different relationships with the three forms of perfection. This finding cautions against assuming that there is one major factor of negative emotionality in reinforcement sensitivity. As noted in the Introduction, the BIS and FFFS are assumed to have different functions, and this would seem to be borne out in our results.

4.2. Limitations and future studies

Our study had a number of limitations. First, the sample was predominantly female (81%), and future studies should replicate our findings with equal proportions of males and females. Second, the study employed a cross-sectional correlational design. Consequently, the relationships found in the regression and mediation analyses indicating that perfectionism and reinforcement sensitivity predicting affective experiences should not be interpreted in a causal or temporal fashion. Future studies may profit from employing longitudinal designs to examine the mediation effects suggested in the present study. Third, our study focused on Hewitt and Flett's (1991) model of multidimensional perfectionism. Although this is one of the most widely-used models of perfectionism, future studies may profit from extending the present research to other models (cf. Chang et al., 2007; Kaye et al., 2008).

4.3. Conclusions

This is the first study to explore the relations between revised RST and multidimensional perfectionism; and it is the first study to control for the substantial overlap in factors of perfection in the exploration of these relations. Our results show consistent associations between the two sets of constructs, and the mediation analyses in particular pointed to causal pathways from perfectionism, through RST factors, to positive and negative affect. Although our results need replicating, they open up new avenues of research into the reinforcement sensitivity and personality bases of perfectionism.

Footnotes

¹Kaye et al. presented the BIS/BAS Scales with a response scale from 1 (*strongly agree*) to 4 (*strongly disagree*) so the signs of the correlations in their Table 2 need to be reversed before interpretation.

²See Supplementary Material for the full results of the mediation analyses including all

total, direct, and indirect effects.

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Table 1

Bivariate Correlations and Descriptive Statistics

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Perfectionism												
1. Self-oriented												
2. Other-oriented	.46***											
3. Socially prescribed	.47***	.31***										
Reinforcement sensitivity												
4. BAS reward interest	.20***	.11*	.02									
5. BAS goal-drive persistence	.50***	.22***	.00	.52***								
6. BAS reward reactivity	.30***	.15**	.07	.49***	.51***							
7. BAS impulsivity	.09	.08	.17***	.31***	.16**	.43***						
8. BIS	.33***	.06	.45***	-.06	.07	.26***	.28***					
9. FFFS	.22***	.07	.12*	.02	.20***	.26***	.19***	.40***				
10. Defensive fight	.20***	.21***	.09	.26***	.31***	.42***	.52***	.19***	.09			
Affective experience												
11. Positive affect	.14**	.12*	-.13**	.43***	.40***	.40***	.13*	-.11*	.00	.20***		
12. Negative affect	.15**	.11*	.41***	-.10*	-.12*	.08	.23***	.57***	.26***	.15**	-.07	
<i>M</i>	69.42	57.21	56.98	17.84	21.42	29.30	20.26	63.33	24.85	22.25	31.56	23.54
<i>SD</i>	15.27	10.97	12.89	4.14	3.91	4.94	5.03	13.67	5.74	4.45	7.40	7.74
Cronbach's alpha	.91	.78	.85	.81	.84	.80	.79	.93	.76	.79	.86	.86

Note. $N = 387$. BAS = Behavioral Approach System; BIS = Behavioral Inhibition System; FFFS = Fight-Flight-Freeze System; positive (negative) affect = positive (negative) affect, past two weeks.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2

Perfectionism and Reinforcement Sensitivity: Semipartial Correlations

	Perfectionism		
	Self-oriented	Other-oriented	Socially prescribed
Reinforcement sensitivity			
BAS reward interest	.18***	.04	-.09
BAS goal-drive persistence	.52***	.01	-.27***
BAS reward reactivity	.27***	.02	-.08
BAS impulsivity	-.01	.03	.15**
BIS	.18***	-.15**	.35***
FFFS	.19***	-.04	.02
Defensive fight	.11*	.13**	-.02

Note. $N = 387$. BAS, BIS, FFFS: see Table 1. Semipartial correlations from multiple regressions simultaneously entering the three forms of perfectionism as predictors.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

Summary of Multiple Regressions Predicting Positive and Negative Affect

	Positive affect		Negative affect	
	ΔR^2	β	ΔR^2	β
Step 1: Perfectionism	.076***		.172***	
Self-oriented perfectionism		.22***		-.05
Other-oriented perfectionism		.10		.00
Socially prescribed perfectionism		-.26***		.44***
Step 2: Reinforcement sensitivity	.217***		.225***	
Self-oriented perfectionism		.02		-.06
Other-oriented perfectionism		.06		.07
Socially prescribed perfectionism		-.12*		.19***
BAS reward interest		.23***		-.01
BAS goal-drive persistence		.14*		-.17**
BAS reward reactivity		.25***		-.03
BAS impulsivity		-.04		.06
BIS		-.11		.45***
FFFS		-.04		.09
Defensive fight		.04		.07

Note. $N = 387$. BAS, BIS, FFFS, positive affect, negative affect: see Table 1. $\Delta R^2 =$ % of variance explained in the step; $\beta =$ standardized regression coefficient.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4

Mediation Analyses: Summary of Indirect Effects (IEs)

Path	IE
Positive affect	
Self-oriented perfectionism → BAS reward interest → positive affect	.04**
Self-oriented perfectionism → BAS goal-drive persistence → positive affect	.06*
Self-oriented perfectionism → BAS reward reactivity → positive affect	.06***
Socially prescribed perfectionism → BAS goal-drive persistence → positive affect	-.04*
Negative affect	
Self-oriented perfectionism → BAS goal-drive persistence → negative affect	-.08**
Self-oriented perfectionism → BIS → negative affect	.07***
Other-oriented perfectionism → BIS → negative affect	-.08**
Socially prescribed perfectionism → BAS goal-drive persistence → negative affect	.05*
Socially prescribed perfectionism → BIS → negative affect	.16***

Note. $N = 387$. BAS, BIS, positive (negative) affect: see Table 1. IEs significance-tested with Sobel and bootstrapping tests.

* $p < .05$. ** $p < .01$. *** $p < .001$.

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Perfectionism, Personality, and Affective Experiences:
New Insights from Revised Reinforcement Sensitivity Theory

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Abstract

Previous studies have linked perfectionism to differences in reinforcement sensitivity, but findings have been mixed. The present study explored the relationships between three forms of perfectionism (self-oriented, other-oriented, socially prescribed) and components of the revised Reinforcement Sensitivity Theory of personality in relation to the experience of positive and negative affect. In a sample of 388 university students, we found consistent evidence of significant bivariate and semipartial correlations controlling for the overlap between the three forms of perfectionism: self-oriented perfectionism showed positive relationships with the Behavioral Approach System (BAS), the Behavioral Inhibition System (BIS), and the Fight-Flight-Freeze System (FFFS); other-oriented perfectionism showed a negative relationship with the BIS (and was unrelated to the FFFS); and socially prescribed perfectionism showed positive relationships with the BIS and BAS impulsiveness, and a negative relationship with BAS goal-drive persistence (and was unrelated to the FFFS). Furthermore, mediation analyses indicated that the reinforcement sensitivity components (BIS and BAS, but not FFFS) explained differences in how the three forms of perfectionism predicted recent positive and negative affect. These findings open up new empirical avenues in suggesting that fundamental emotion-motivational systems play a key role in the relationship of perfectionism and affective experiences.

Keywords: perfectionism; reinforcement sensitivity theory; affect; mediation analyses

1. Introduction

1.1. Multidimensional perfectionism

Perfectionism is a multidimensional personality trait characterized by exceedingly high standards of performance (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). One of its most influential and widely researched models of perfectionism is Hewitt and Flett's (1991) which differentiates three forms of perfectionism: self-oriented, other-oriented, and socially prescribed. Self-oriented perfectionism reflects beliefs that striving for perfection and being perfect are important. Self-oriented perfectionists are highly self-critical if they fail to meet their own expectations. In contrast, other-oriented perfectionism reflects beliefs that it is important for others to strive for perfection and be perfect. Other-oriented perfectionists are highly critical of others who fail to meet these expectations. Finally, socially prescribed perfectionism reflects beliefs that striving for perfection and being perfect are important to

others. Socially prescribed perfectionists believe that others expect them to be perfect, and that others will be highly critical of them if they fail to meet these expectations.

These three forms of perfectionism have shown different relationships with indicators of psychological well-being (Hewitt & Flett, 2004). In particular, self-oriented perfectionism is an ambivalent forms of perfectionism showing positive and negative relationships with psychological well-being whereas other-oriented perfectionism usually shows no significant relationship with psychological well-being. In contrast, socially prescribed perfectionism is a maladaptive form showing consistent negative relationships with psychological well-being. As regards affective experiences (Watson, Clark, & Tellegen, 1988), self-oriented perfectionism has shown positive correlations with both positive and negative affect, whereas socially prescribed perfectionism has shown positive correlations with negative affect and, sometimes, negative correlations with positive affect (e.g., Damian, Stoeber, Negru, & Băban, 2014; Flett, Blankstein, & Hewitt, 2009; Molnar, Reker, Culp, Sadava, & DeCourville, 2006). In comparison, other-oriented perfectionism usually shows nonsignificant correlations with negative affect, but may show positive correlations with positive affect (e.g., Flett et al., 2009; Molnar et al., 2006).

1.2. Multidimensional perfectionism and reinforcement sensitivity

The Reinforcement Sensitivity Theory (RST) is a prominent neuropsychological theory of personality explaining the role of individual differences in fear and anxiety-related behaviors as well as approach-related behaviors. It assumes the existence of three emotional-motivational systems: one approach system (the Behavioral Approach System, BAS) and two avoidance systems (the Behavioral Inhibition System, BIS; and the Fight-Flight-Freeze System, FFFS). Whereas the BAS has been shown to be related to the experience of positive affect, the BIS and FFFS are related to the experience of negative affect (Corr, 2008). In this, the most distinctive features of the two avoidance systems are emotional output and defensive direction: The BIS activates behavioral repertoire when moving *toward* threat, eliciting the emotional state of anxiety; in contrast, the FFFS activates behavior that moves the individual *away* from threat, eliciting the emotional state of fear.

RST is a potentially important theory for research on multidimensional perfectionism because it may help explain why perfectionism is related to positive and negative affect. A number of studies have investigated perfectionism and components of RST using Carver and White's (1994) BIS/BAS Scales to differentiate the BIS, and three aspects of the BAS (reward responsiveness, drive, and fun seeking). As regards Hewitt and Flett's (1991) model of

perfectionism, a study described by Flett, Hewitt, Oliver, and Macdonald (2002) found all three forms of perfectionism to show positive correlations with the BIS. In addition, self-oriented perfectionism showed positive correlations with the BAS (reward responsiveness and drive). By comparison, Kaye, Conroy, and Fifer (2008) found only self-oriented perfectionism and socially prescribed perfectionism to show positive correlations with the BIS, but not other-oriented perfectionism. Moreover, when they combined BAS reward responsiveness, drive, and fun seeking to an overall BAS score, they found self-oriented perfectionism to show a positive correlations with the BAS whereas socially prescribed perfectionism showed a negative correlation.¹

The only study so far addressing how multidimensional perfectionism is related to revised RST is by Randles, Flett, Nash, McGregor, and Hewitt (2010) who examined two samples of university students using a reformulation of the BIS/BAS Scales to differentiate the BIS from the FFFS (Heym, Ferguson, & Lawrence, 2008). Across samples, self-oriented perfectionism showed positive correlations with the BIS, BAS reward responsiveness, and BAS drive, and socially prescribed perfectionism showed a positive correlation with the BIS. Otherwise, findings were mixed. In one sample, other-oriented perfectionism showed positive correlations with the BIS, BAS reward responsiveness, and BAS drive, and a negative correlation with the FFFS. In the other sample, other-oriented perfectionism showed no significant correlations with any component of revised RST. In addition, socially prescribed perfectionism showed an unexpected positive correlation with BAS reward responsiveness in one sample.

Notwithstanding some unexpected and nonsignificant correlations, when taken together, the findings from previous studies on multidimensional perfectionism and reward sensitivity provide two pieces of converging evidence. First, both self-oriented and socially prescribed perfectionism show consistent positive correlations with the BIS. Second, only self-oriented perfectionism shows consistent positive correlations with the BAS (particularly reward responsiveness and drive). In contrast, other-oriented perfectionism does not show a consistent pattern of correlations across studies.

1.3. The present study

The previous studies on multidimensional perfectionism and reinforcement sensitivity have a number of limitations. First, the three forms of perfectionism show considerable overlap—with correlations between the three forms ranging into the .50s (Hewitt & Flett, 2004)—and none of the studies controlled for this overlap when investigating the relationships between these three

forms and various RST components. Therefore, some of these unexpected and inconsistent correlations may be due to variance redundancy, and more consistent relationships may emerge when unique relationships are examined by statistically controlling for this overlap. Second, so far only one study investigated multidimensional perfectionism and components of revised RST (Randles et al., 2010), so clearly more research is needed. Third, there have been further recent developments in revised RST as regards theory, research, and measurement.

Reflecting further refinement and theoretical elaboration of RST (Corr & McNaughton, 2008, 2012; McNaughton & Corr, 2004), Corr and Cooper (2015) developed a new psychometric measure of revised RST—the Reinforcement Sensitivity Theory Personality Questionnaire (RST-PQ)—capturing individual differences the BIS, the FFFS, and four aspects of the BAS (reward interest, goal-drive persistence, reward reactivity, and impulsivity) as well as defensive fight, which provides the means to provide a more comprehensive investigation of perfectionism–RST relationships.

Consequently, the aim of the present study was to examine the unique relationships of self-oriented, other-oriented, and socially prescribed perfectionism with the components of the revised RST captured by the RST-PQ. In addition, the study aimed to investigate whether RST mediates the relationship between perfectionism and affective experiences. Randles et al. (2010) argued that the BIS serves as a mediator between multidimensional perfectionism and psychological maladjustment, and the mediation analysis they conducted found that the BIS mediated the effect of socially prescribed perfectionism on rumination (socially prescribed perfectionism → BIS → rumination), which is a cognitive vulnerability factor closely related to negative affect (e.g., Kirkegaard Thomsen, 2006). The present study aimed to expand on Randles et al.'s findings by further exploring mediation effects of revised RST regarding positive and negative affect (Watson et al., 1988).

In line with previous findings showing self-oriented perfectionism to be associated with positive affect once the overlap with socially prescribed perfectionism is controlled for (e.g., Molnar et al., 2006), we expected self-oriented perfectionism to show unique positive relationships with positive affect. Moreover, we expected the BAS to mediate these relationships. In contrast, we expected socially prescribed perfectionism to show unique positive relationships with negative affect, and the BIS to mediate these relationships. In contrast, the analyses for other-oriented perfectionism were largely exploratory because other-oriented perfectionism has not shown any clear pattern of relationships with BIS/BAS in previous studies

(cf. 1.2).

2. Method

2.1. Participants

A sample of 388 students (73 men, 312 women, 1 preferred not to state his/her gender) at the University of Kent was recruited via the School of Psychology's Research Participation Scheme. Mean age of students was 19.8 years ($SD = 4.0$). Using the categories of the university's equal opportunities monitoring form, students indicated their ethnicity as White (68%), Black (11%), Asian (10%), mixed race (6%), and other (5%). Students volunteered to participate for a £50 raffle (~US \$78) or extra course credit and completed all measures online using the School's Qualtrics® platform, which required to respond to all questions to prevent missing data.

2.2. Measures

2.2.1. Perfectionism

The 45-item Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 2004) was used to measure self-oriented perfectionism (e.g., "I demand nothing less than perfection of myself"), other-oriented perfectionism ("If I ask someone to do something, I expect it to be done flawlessly"), and socially prescribed perfectionism ("People expect nothing less than perfection from me"). The MPS has demonstrated reliability and validity in numerous studies (e.g., Hewitt & Flett, 1991, 2004). Participants were asked to what degree they agreed with each statement and responded on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

2.2.2. Reinforcement sensitivity

The 79-item Reinforcement Sensitivity Theory Personality Questionnaire (RST-PQ; Corr & Cooper, 2015) was used to measure BAS reward interest (e.g., "I regularly try new activities just to see if I enjoy them"), BAS goal-drive persistence ("I am very persistent in achieving my goals"), BAS reward reactivity ("I get a special thrill when I am praised for something I've done well"), BAS impulsivity ("I find myself doing things on the spur of the moment"), BIS ("When trying to make a decision, I find myself constantly chewing it over"), FFFS ("I am the sort of person who easily freezes-up when scared"), and defensive fight ("If I feel threatened I will fight back"). The RST-PQ is a recently developed questionnaire, but initial findings indicate good reliability and validity (Corr & Cooper, 2015). Participants were asked how accurately each statement described them and responded on a scale from 1 (*not at all*) to 4 (*highly*).

2.2.3. Positive and negative affect (past two weeks)

The 20-item Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) was

used to measure positive affect (e.g., “enthusiastic,” “proud”) and negative affect (“distressed,” “ashamed”). The PANAS is the most widely-used measure of positive and negative affect and has demonstrated reliability and validity in numerous studies (e.g., Crawford & Henry, 2004; Watson et al, 1998). Participants were asked to indicate to what extent they have felt each feeling/emotion during the past two weeks using a scale from 1 (*very slightly or not at all*) to 5 (*extremely*).

2.3. Data screening

Because multivariate outliers can distort the results of correlation and regression analyses, we excluded one participant who showed a Mahalanobis distance larger than the critical value of $\chi^2(12) = 32.91, p < .001$ (Tabachnick & Fidell, 2007). With this, the final sample comprised 387 participants. Next, we examined whether the variance-covariance matrices of male and female participants differed by computing a Box’s *M* test with gender as between-participants factor. Box’s *M* was nonsignificant with $p = .142$. Consequently, all analyses were collapsed across gender. Finally, we examined the reliability of the scale scores. All scores displayed satisfactory reliability (Cronbach’s alphas $> .70$; see Table 1).

3. Results

3.1. Bivariate correlations

First, we examined the bivariate correlations of perfectionism (Table 1). Self-oriented perfectionism showed significant positive correlations with all reinforcement sensitivity factors (except BAS impulsivity), indicating heightened general emotionality. In comparison, other-oriented perfectionism showed positive correlations only with BAS reward interest, BAS goal-drive persistence, BAS reward reactivity, and defensive fight, indicating strong approach motivation in the absence of negative emotionality. In contrast, socially prescribed perfectionism showed positive correlations with BAS impulsivity, BIS, and FFFS, indicating an unrestrained form of negative emotionality. Furthermore, self-oriented and other-oriented perfectionism showed positive correlations with both positive and negative affect, whereas socially prescribed perfectionism showed a negative correlation with positive affect and a positive correlations with negative affect. (For the correlations of the RST components, see Table 1.)

3.2. Semipartial correlations

Because the three forms of perfectionism showed considerable overlap (with correlations ranging from .31 to .47), we computed semipartial correlations between perfectionism and the RST components to examine the unique relationships (Table 2). Self-oriented perfectionism

showed the same pattern of relationships as in the bivariate correlations, whereas the other two forms of perfectionism showed a different pattern. Other-oriented perfectionism showed a negative relationship with BIS and a positive relationship with defensive fight. Socially prescribed perfectionism showed positive relationships with BIS, and BAS impulsivity and a negative relationship with BAS goal-drive persistence.

3.3. Multiple regressions

Next, we examined how perfectionism and reinforcement sensitivity predicted positive and negative affect, additionally probing for possible mediation effects. For this, we computed hierarchical regression analyses in two steps. In Step 1, the three forms of perfectionism were simultaneously entered as predictors. In Step 2, the RST components were added (Table 3).

As regards positive affect, self-oriented perfectionism showed significant positive regression coefficient, and socially prescribed perfectionism a significant negative coefficient in Step 1. In Step 2, self-oriented perfectionism ceased to show a significant coefficient, and socially prescribed perfectionism continued to show a significant negative coefficient that was reduced in size, indicating the presence of mediation effects (Baron & Kenny, 1986). Furthermore, BAS reward interest, BAS goal-drive persistence, and BAS reward reactivity showed significant positive coefficients whereas BIS showed a significant negative coefficient.

As regards negative affect, only socially prescribed was a significant predictor in Step 1 showing a positive regression coefficient, indicating that the positive bivariate correlations that self- and other-oriented perfectionism showed with negative affect were due to their overlap with socially prescribed perfectionism. In Step 2, socially prescribed perfectionism continued to show a significant positive regression coefficient, but reduced in size. Furthermore, BIS showed a significant positive coefficient, and BAS goal-drive persistence showed a significant negative coefficient.

3.3. Mediation analyses

The pattern of significant regression coefficients in the regression analyses suggested that some effects of perfectionism were mediated by reinforcement sensitivity. Moreover, the results of Tables 2 and 3 combined suggested the possibility of further indirect effects of perfectionism predicting positive and negative affect via reinforcement sensitivity (perfectionism → reinforcement sensitivity → positive/negative affect). Consequently, we conducted mediation analyses with PROCESS (Hayes, 2012) testing each indirect effects for significance with Sobel

tests and 95% confidence-interval bootstrapping. Table 4 lists all significant indirect effects.² (Note that the sign of indirect effects is determined by the signs of effects it combines. If a predictor X positively predicts a mediator M, and M positively predicts an outcome Y, the indirect effect of X on Y is positive. The same holds if X negatively predicts M, and M negatively predicts Y. In contrast, if X positively predicts M, and M negatively predicts Y, the indirect effect of X on Y is negative. The same holds if X negatively predicts M, and M positively predicts Y.)

As regards positive affect, self-oriented perfectionism showed positive indirect effects via BAS reward interest, BAS goal-drive persistence, and BAS reward reactivity. In contrast, socially prescribed perfectionism showed a negative indirect effect via BAS goal-drive persistence. As regards negative affect, self-oriented perfectionism showed a negative indirect effect via BAS goal-drive persistence, but also a positive indirect effect via BIS. In contrast, other-oriented perfectionism showed a negative indirect effect via BIS. Like self-oriented perfectionism, socially prescribed perfectionism also showed a positive indirect effect via BIS, but—differently from self-oriented perfectionism—showed a positive indirect effect via BAS goal-drive persistence.

4. Discussion

4.1. The present findings

We sought to examine the unique relationships of self-oriented, other-oriented, and socially prescribed perfectionism with the different components of reinforcement sensitivity—regarding the Behavioral Approach System (BAS), the Fight-Flight-Freeze System (FFFS), and the Behavioral Inhibition System (BIS)—put forward by latest advances in theory and research on revised reinforcement sensitivity theory (Corr & Cooper, 2015). Furthermore, the study investigated how perfectionism and reinforcement sensitivity combine to predict recent positive and negative affect, and whether reinforcement sensitivity plays a mediating role in these predictions.

Self-oriented perfectionism showed unique positive relationship with all reinforcement sensitivity components (except BAS impulsivity), suggesting that people high in self-oriented perfectionism are highly reactive to positive and negative reinforcing stimuli. In the mediation analyses, self-oriented perfectionism had both positive and negative indirect effects on affective well-being confirming that it is an ambivalent form of perfectionism. On the one hand, self-oriented perfectionism predicted more positive affect via BAS reward interest, BAS goal-drive

persistence, and BAS reward reactivity, and less negative affect via BAS goal-drive persistence; on the other hand, self-oriented perfectionism predicted more negative affect via BIS. Self-oriented perfectionism thus appears to be a “double-edged sword” (Stoeber, 2014c) as it is predicting higher levels of positive affect as well as negative affect. Moreover, self-oriented perfectionism was the only form of perfectionism showing a unique positive relationship with the FFFS which is the avoidance system in revised RST associated with the emotional state of fear.

Other-oriented perfectionism showed a unique positive relationship with defensive fight, and a unique negative relationship with the BIS. Furthermore differing from self-oriented perfectionism, other-oriented perfectionism predicted less negative affect via low BIS activity in the mediation analyses. People high in other-oriented perfectionism thus appear highly defensive when attacked, but show reduced sensitivity to negative reinforcers (low BIS activity) which dovetails with findings that other-oriented perfectionism is related to psychopathy (Stoeber, 2014a). Moreover, even though the negative relationship we found with the BIS was weak (cf. Cohen, 1988), this reduced sensitivity appears to make them experience less negative affect compared to people low in other-oriented perfectionism.

In contrast, socially prescribed perfectionism emerged as a thoroughly maladaptive form of perfectionism, as was expected. Like self-oriented perfectionism, socially prescribed perfectionism showed unique positive relationships with the BIS, but also a positive relationship with BAS impulsiveness and a negative relationship with BAS goal-drive persistence. In the mediation analyses, socially prescribed perfectionism predicted less positive affect via low goal-drive persistence. In addition, it predicted more negative affect via low goal-drive persistence and high BIS activity. Furthermore, socially prescribed perfectionism had direct negative effects on affective well-being: a direct negative effect on positive affect, and a direct positive effect on negative affect. Like people high in self-oriented perfectionism, people high in self-oriented perfectionism appear to have a highly active BIS, but are also impulsive and not persistent in their goal pursuits. Moreover, the combination of high BIS activity and low goal-drive persistence makes them experience more negative affect and less positive affect—over and above their usual affective experiences of low positive and high negative affect—compared to people low in socially prescribed perfectionism.

Our study is the first to examine the relationships of multidimensional perfectionism with the components of the expanded model of revised RST. It is noteworthy that the three forms of

perfectionism showed a distinctive profile of unique relationships with the revised RST components, providing further evidence that the three forms of perfectionism have unique profiles when unique relationships with personality characteristics are examined (e.g., Stoeber, 2014a, 2014b). In particular, it noteworthy that the BIS and FFFS showed different relationships with the three forms of perfection. This finding cautions against assuming that there is one major factor of negative emotionality in reinforcement sensitivity. As noted in the Introduction, the BIS and FFFS are assumed to have different functions, and this would seem to be borne out in our results.

4.2. Limitations and future studies

Our study had a number of limitations. First, the sample was predominantly female (81%), and future studies should replicate our findings with equal proportions of males and females. Second, the study employed a cross-sectional correlational design. Consequently, the relationships found in the regression and mediation analyses indicating that perfectionism and reinforcement sensitivity predicting affective experiences should not be interpreted in a causal or temporal fashion. Future studies may profit from employing longitudinal designs to examine the mediation effects suggested in the present study. Third, our study focused on Hewitt and Flett's (1991) model of multidimensional perfectionism. Although this is one of the most widely-used models of perfectionism, future studies may profit from extending the present research to other models (cf. Chang et al., 2007; Kaye et al., 2008).

4.3. Conclusions

This is the first study to explore the relations between revised RST and multidimensional perfectionism; and it is the first study to control for the substantial overlap in factors of perfection in the exploration of these relations. Our results show consistent associations between the two sets of constructs, and the mediation analyses in particular pointed to causal pathways from perfectionism, through RST factors, to positive and negative affect. Although our results need replicating, they open up new avenues of research into the reinforcement sensitivity and personality bases of perfectionism.

Footnotes

¹Kaye et al. presented the BIS/BAS Scales with a response scale from 1 (*strongly agree*) to 4 (*strongly disagree*) so the signs of the correlations in their Table 2 need to be reversed before interpretation.

²See Supplementary Material for the full results of the mediation analyses including all

total, direct, and indirect effects.

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Table 1

Bivariate Correlations and Descriptive Statistics

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Perfectionism												
1. Self-oriented												
2. Other-oriented	.46***											
3. Socially prescribed	.47***	.31***										
Reinforcement sensitivity												
4. BAS reward interest	.20***	.11*	.02									
5. BAS goal-drive persistence	.50***	.22***	.00	.52***								
6. BAS reward reactivity	.30***	.15**	.07	.49***	.51***							
7. BAS impulsivity	.09	.08	.17***	.31***	.16**	.43***						
8. BIS	.33***	.06	.45***	-.06	.07	.26***	.28***					
9. FFFS	.22***	.07	.12*	.02	.20***	.26***	.19***	.40***				
10. Defensive fight	.20***	.21***	.09	.26***	.31***	.42***	.52***	.19***	.09			
Affective experience												
11. Positive affect	.14**	.12*	-.13**	.43***	.40***	.40***	.13*	-.11*	.00	.20***		
12. Negative affect	.15**	.11*	.41***	-.10*	-.12*	.08	.23***	.57***	.26***	.15**	-.07	
<i>M</i>	69.42	57.21	56.98	17.84	21.42	29.30	20.26	63.33	24.85	22.25	31.56	23.54
<i>SD</i>	15.27	10.97	12.89	4.14	3.91	4.94	5.03	13.67	5.74	4.45	7.40	7.74
Cronbach's alpha	.91	.78	.85	.81	.84	.80	.79	.93	.76	.79	.86	.86

Note. $N = 387$. BAS = Behavioral Approach System; BIS = Behavioral Inhibition System; FFFS = Fight-Flight-Freeze System; positive (negative) affect = positive (negative) affect, past two weeks.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2

Perfectionism and Reinforcement Sensitivity: Semipartial Correlations

	Perfectionism		
	Self-oriented	Other-oriented	Socially prescribed
Reinforcement sensitivity			
BAS reward interest	.18***	.04	-.09
BAS goal-drive persistence	.52***	.01	-.27***
BAS reward reactivity	.27***	.02	-.08
BAS impulsivity	-.01	.03	.15**
BIS	.18***	-.15**	.35***
FFFS	.19***	-.04	.02
Defensive fight	.11*	.13**	-.02

Note. $N = 387$. BAS, BIS, FFFS: see Table 1. Semipartial correlations from multiple regressions simultaneously entering the three forms of perfectionism as predictors.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

Summary of Multiple Regressions Predicting Positive and Negative Affect

	Positive affect		Negative affect	
	ΔR^2	β	ΔR^2	β
Step 1: Perfectionism	.076***		.172***	
Self-oriented perfectionism		.22***		-.05
Other-oriented perfectionism		.10		.00
Socially prescribed perfectionism		-.26***		.44***
Step 2: Reinforcement sensitivity	.217***		.225***	
Self-oriented perfectionism		.02		-.06
Other-oriented perfectionism		.06		.07
Socially prescribed perfectionism		-.12*		.19***
BAS reward interest		.23***		-.01
BAS goal-drive persistence		.14*		-.17**
BAS reward reactivity		.25***		-.03
BAS impulsivity		-.04		.06
BIS		-.11		.45***
FFFS		-.04		.09
Defensive fight		.04		.07

Note. $N = 387$. BAS, BIS, FFFS, positive affect, negative affect: see Table 1. $\Delta R^2 =$ % of variance explained in the step; $\beta =$ standardized regression coefficient.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4

Mediation Analyses: Summary of Indirect Effects (IEs)

Path	IE
Positive affect	
Self-oriented perfectionism → BAS reward interest → positive affect	.04**
Self-oriented perfectionism → BAS goal-drive persistence → positive affect	.06*
Self-oriented perfectionism → BAS reward reactivity → positive affect	.06***
Socially prescribed perfectionism → BAS goal-drive persistence → positive affect	-.04*
Negative affect	
Self-oriented perfectionism → BAS goal-drive persistence → negative affect	-.08**
Self-oriented perfectionism → BIS → negative affect	.07***
Other-oriented perfectionism → BIS → negative affect	-.08**
Socially prescribed perfectionism → BAS goal-drive persistence → negative affect	.05*
Socially prescribed perfectionism → BIS → negative affect	.16***

Note. $N = 387$. BAS, BIS, positive (negative) affect: see Table 1. IEs significance-tested with Sobel and bootstrapping tests.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Supplementary Material

Mediation Analyses: Full Results

	Effect
Positive affect	
Self-oriented perfectionism (SOP)	
Total effect	.16***
Direct effect	.02
Indirect effects	
SOP → BAS reward interest → positive affect	.04**
SOP → BAS goal-drive persistence → positive affect	.06*
SOP → BAS reward reactivity → positive affect	.06***
SOP → BAS impulsivity → positive affect	.00
SOP → BIS → positive affect	-.02
SOP → FFFS → positive affect	-.01
SOP → defensive fight → positive affect	.00
Other-oriented perfectionism (OOP)	
Total effect	.10
Direct effect	.06
Indirect effects	
OOP → BAS reward interest → positive affect	.01
OOP → BAS goal-drive persistence → positive affect	.00
OOP → BAS reward reactivity → positive affect	.01
OOP → BAS impulsivity → positive affect	-.00
OOP → BIS → positive affect	.02
OOP → FFFS → positive affect	.00
OOP → defensive fight → positive affect	.01
Socially prescribed perfectionism (SPP)	
Total effect	-.23***
Direct effect	-.10*
Indirect effects	
SPP → BAS reward interest → positive affect	-.02
SPP → BAS goal-drive persistence → positive affect	-.04*
SPP → BAS reward reactivity → positive affect	-.02
SPP → BAS impulsivity → positive affect	-.01

SPP → BIS → positive affect	-.04
SPP → FFFS → positive affect	.00
SPP → defensive fight → positive affect	.00
Negative affect	
Self-oriented perfectionism (SOP)	
Total effect	-.04
Direct effect	-.04
Indirect effects	
SOP → BAS reward interest → negative affect	.00
SOP → BAS goal-drive persistence → negative affect	-.08**
SOP → BAS reward reactivity → negative affect	-.01
SOP → BAS impulsivity → negative affect	.00
SOP → BIS → negative affect	.07***
SOP → FFFS → negative affect	.02
SOP → defensive fight → negative affect	.01
Other-oriented perfectionism (OOP)	
Total effect	.00
Direct effect	.08
Indirect effects	
OOP → BAS reward interest → negative affect	.00
OOP → BAS goal-drive persistence → negative affect	.00
OOP → BAS reward reactivity → negative affect	.00
OOP → BAS impulsivity → negative affect	.00
OOP → BIS → negative affect	-.08**
OOP → FFFS → negative affect	.00
OOP → defensive fight → negative affect	.01
Socially prescribed perfectionism (SPP)	
Total effect	.39***
Direct effect	.17***
Indirect effects	
SPP → BAS reward interest → negative affect	.00
SPP → BAS goal-drive persistence → negative affect	.05*
SPP → BAS reward reactivity → negative affect	.00
SPP → BAS impulsivity → negative affect	.01
SPP → BIS → negative affect	.16***
SPP → FFFS → negative affect	.00
SPP → defensive fight → negative affect	.00

Note. $N = 387$. BAS = Behavioral Approach System; BIS = Behavioral Inhibition System; FFFS = Fight-Flight-Freeze System; positive (negative) affect = positive (negative) affect, past two weeks. Indirect effects significance-tested with Sobel and bootstrapping tests. Significant indirect effects are meaningful independent of whether the total effect is significant or not (see, e.g., Rucker, Preacher, Tormala, & Petty, 2011; Zhao, Lynch, & Chen, 2010).

* $p < .05$. ** $p < .01$. *** $p < .001$.

References

- Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. *Social and Personality Psychology Compass*, *5*, 359-371.
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